

FIG. 1, native human IL-13 (SEQ ID NO. 1)

G P V P P S T A L R E L I E E L V N I T Q N Q K
A P L C N G S M V W S I N L T A G M Y C A A L E
S L I N V S G C S A I E K T Q R M L S G F C P H
K V S A G Q F S S L H V R D T K I E V A Q F V K
D L L L H L K K L F R E G R F N *

FIG. 2, native murine IL-13 (SEQ ID NO. 2)

G P V P R S V S L P L T L K E L I E E L S N I T Q
D Q T P L C N G S M V W S V D L A A G G F C V A
L D S L T N I S N C N A I Y R T Q R I L H G L C
N R K A P T T V S S L P D T K I E V A H F I T K
L L S Y T K Q L F R H G P F *

FIG. 3, Alignment of several mammalian IL-13 sequences

		* 20	* 40	* 60	
HUMAN	:	GPVPP-----STALRELIEELVNITQKAPL	LCNGSMVWSINITAGM-YCAALES	INVSGCSAIEK	TQRM
PIG	:	GPVPPH----STALKELIEELVNITQNQKTP	LCNGSMVWSVNLTISMOYCAALE	SLINISDCSAIQK	TQRM
BOVIN	:	SPVBS----ATALKELIEELVNITQNQKTP	LCNGSMVWSLNLTSSM-YCAALD	SLISISNC	SVIORTKKM
DOG	:	SPVTP----SPTLKELIEELVNITQNQ-ASL	LCNGSMVWSVNLTAGM-YCAALE	SLINISDCSAIQRT	QRM
MOUSE	:	GPVPRSVSLPLTLKELIEELSNITQDQ-TP	LCNGSMVWSVDIAGG-FCVALD	SLTNISNCNAIYR	TQRI
RAT	:	GPVRSTSPPPVALRELIEELSNITQDQK	TSLCNSMWWSDILTAGG-FCA	AALES	LTNISSCNAIHTRTQRI
		* 80	* 100	*	
HUMAN	:	LSGFCPHKVSAGQFSSLHVRDTKIEVAQFV	KDLLLHLKKLFFREGRN	SEQ	ID NO. 1
PIG	:	LSALCSHKPPSEQVPGKHIRDTKIEVAQFV	KDLLLHLKKLFFRG--	SEQ	ID NO. 3
BOVIN	:	LNALCPHKPSAKQVSSEYVRDTKIEVAQF	VLKDLIRHSRIVFERNERFN	SEQ	ID NO. 4
DOG	:	LKAJCSQKPAAGQISSERSRDTKIEVIQ	LVKNLLTYVRGVYRHGNFR	SEQ	ID NO. 5
MOUSE	:	LHGLCNRKAP-TTVSS--LPDTKIEVAHF	ITKLLSITKQLFRHGPF-	SEQ	ID NO. 2
RAT	:	LNGLCNQKAS-DVASS--PPDTKIEVAQF	ISKLLNYSKQLFRYGH--	SEQ	ID NO. 6

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FIG. 4, IL-13 sequences from non-human primates

1	S P V P P S T A L K E L I E E L V N I T
1	S P V P R S T A L K E L I E E L V N I T
10	G P V P P Y T A L K E L I E E L V N I T
21	Q N Q K A P L C N G S M V W S I N L T A
21	Q N Q K A P L C N G S M V W S I N L T A
21	Q N Q K A P L C N G S M V W S I N M T A
15	
41	G V Y C A A L E S L I N V S G C S A I E
41	G V Y C A A L E S L I N V S G C S A I E
41	G V Y C A A L E S L I N V S G C S A I E
20	
61	K T Q R M L N G F C P H K V S A G Q F S
61	K T Q R M L N G F C P H K V S A G Q F S
61	K T Q R M L S G F C P H K V S A G Q F S
25	
81	S L R V R D T K I E V A Q F V K D L L V
81	S L R V R D T K I E V A Q F V K D L L V
81	S L L V R D T K I E V A Q F V K D L L R
30	
101	H L K K L F R E G Q F N . cynomolgus IL13 SEQ ID NO.7
101	H L K K L F R E G R F N . rhesus IL13 SEQ ID NO.8
101	H L R K L F H Q G T F N . marmoset IL13 SEQ ID NO.9

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FIG. 5, Immunogen 1 (protein SEQ ID NO. 10, coding DNA SEQ ID NO. 62, non-coding DNA SEQ ID NO. 63)

5

1	GGCCCTGTGCCCTCCCTCTAGCGCCCTCAAGGAGCTCATTGAGGAGCTGGCCAACATCACC	60
10	CGGGGACACGGAGGGAGATCGCGGGAGTTCCCTCGAGTAACCTCTCGACC GGTTGTAGTGG	
	G P V P P S S A L K E L I E E L A N I T	
61	CAGAACAGAAGGCTCGCTCTGCAATGGCAGCATGGTATGGAGCATCAACCTGACAGCT	120
15	GTCTTGGTCTTCCGAGGCGAGACGTTACCGTCGTACCCATACCTCGTAGTTGGACTGTCGA	
	Q N Q K A P L C N G S M V W S I N L T A	
121	GGCATGTACTGTGCAGCCCTGGACTCCCTGATCAACGTGTCAAGGCTGCAGTGCCATCGAG	180
20	CCGTACATGACACGTCGGACCTGAGGGACTAGTTGACAGTCCGACGTACCGTAGCTC	
	G M Y C A A L D S L I N V S G C S A I E	
181	CGGACCCAGAGGATCTTGAGCGCCTCTGCCCGACAAGGTCTCAGCTGGCAGTTTCC	240
25	GCCTGGGTCTCCTAGAACCTCGCGGAAGACCGGGCTTCCAGAGTCGACCCGTCAAAAGG	
	R T Q R I L S A F C P H K V S A G Q F S	
241	AGCTTGCCTGTCGAGACACCAAAATCGAGGTGGCCAGTTGTAACGGACCTGCTCGTA	300
30	TCGAACGCACAGGCTCTGTTAGCTCCACCGGTCAAACATTGCCCTGGACGAGCAT	
	S L R V R D T K I E V A Q F V T D L L V	
301	CATTTAAAGAGACTTTTCGCCAGGGAACGTTCAAC	336
	GTAAATTCTCTGAAAAAGCGGTCCCTTGCAAGTTG	
35	H L K R L F R Q G T F N	

FIG. 6, Immunogen 2 (SEQ ID NO. 11),

G	P	V	P	P	S	T	A	L	R	E	L	I	E	E	L	V	N	I	T	Q	
5	N	Q	K	A	P	L	C	N	G	S	M	V	W	S	I	N	L	T	A	G	M
Y	C	A	A	L	E	S	L	I	N	V	S	G	C	S	A	I	E	K	T	Q	
R	M	L	G	G	F	C	P	H	K	F	N	N	F	T	V	S	F	W	L	R	
V	P	K	V	S	A	S	H	L	E	D	T	K	I	E	V	A	Q	F	V	K	
D	L	L	L	H	L	K	K	L	F	R	E	G	R	F	N						

FIG. 7. Immunogen 3 (SEQ ID NO. 12)

20 FIG. 8, Immunojen 4 (SEQ ID NO. 13)

G	P	V	P	R	S	V	S	L	P	L	T	L	K	E	L	I	E	E	L	S	
N	I	T	Q	D	Q	T	P	L	C	N	G	S	M	V	W	S	V	D	L	A	
A	G	G	F	C	V	A	L	D	S	L	T	N	I	S	N	C	N	A	I	Y	
R	T	Q	R	I	L	H	G	L	C	N	R	K	F	N	N	F	T	V	S	F	
25	W	L	R	V	P	K	V	S	A	S	H	L	E	D	T	K	I	E	V	A	H
	F	I	T	K	I	I	S	Y	T	K	Q	L	F	R	H	G	P	F			

FIG. 9. Immunojen 5 (SEO ID NO. 14)

FIG. 10 Immunojen 6 (SEQ ID NO. 15)

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FIG 11, Immunogen 7 (protein SEQ ID NO. 16, DNA SEQ ID NO. 64)

5 TACGTACATTCCGACGGCTCTTATCCAAAAGACAAGTTGAGAAAATCAATGGCACTTGG
 Y V H S D G S Y P K D K F E K I N G T W

10 TACTACTTGCACAGTTCAGGCTATATGCTTGCAGACCGCTGGAGGAAGCACACAGACGGC
 Y Y F D S S G Y M L A D R W R K H T D G

15 AACTGGTACTGGTTCGACAACTCAGGCGAAATGGCTACAGGCTGGAAAGAAAATCGCTGAT
 N W Y W F D N S G E M A T G W K K I A D

20 AAGTGGTACTATTTCAACCGAAGAAGGTGCCATGAAGACAGGGCTGGGTCAAGTACAAGGAC
 K W Y Y F N E E G A M K T G W V K Y K D

25 ACTTGGTACTACTTAGACGCTAAAGAAGGCGCCATGCAATAACATCAAGGCTAACTCTAAG
 T W Y Y L D A K E G A M Q Y I K A N S K

30 TTCATGGTACTCACTGAAGGCGTCATGGTATCAAATGCCTTATCCAGTCAGCGGACGGA
 F I G I T E G V M V S N A F I Q S A D G

35 ACAGGCTGGTACTACCTCAAACCCAGACGGAACACTGGCAGACAGGCCAGAAGGCCCTGTG
 T G W Y Y L K P D G T L A D R P E G P V

40 CCTCCCTCTAGCGCCCTCAAGGAGCTCATTGAGGAGCTGGCCAACATCACCCAGAACAG
 P P S S A L K E L I E E L A N I T Q N Q

45 AAGGCTCCGCTCTGCAATGGCAGCATGGTATGGAGCATCAACCTGACAGCTGGCATGTAC
 K A P L C N G S M V W S I N L T A G M Y

50 TGTGCAGCCCTGGACTCCCTGATCAACGTGTCAAGGCTGCAGCTGCCATCGAGCGGACCCAG
 C A A L D S L I N V S G C S A I E R T Q

55 AGGATCTTGAGCGCCTCTGCCCGACAAGGTCTCAGCTGGCAGTTTCCAGCTTGCCT
 R I L S A F C P H K V S A G Q F S S L R

60 GTCCGAGACACCAAAATCGAGGTGGCCAGTTGTAACGGACCTGCTCGTACATTAAAG
 V R D T K I E V A Q F V T D L L V H L K

65 AGACTTTTCGCCAGGGAACGTTCAAC
 R L F R Q G T F N

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FIG. 12, Immunogen 8 (protein SEQ ID NO. 17, DNA SEQ ID NO. 65)

5	TCCCTCTCATCTTCTAACATGGCGAACACCCAGATGAAGTCCGATAAAATCATCATCGCG
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	S S H S S N M A N T Q M K S D K I I I A
10	CACAGGGGAGCTAGCGGGTATCTGCCTGAGCACACCCCTGGAGTCCAAGGCTCTGGCGTTC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	H R G A S G Y L P E H T L E S K A L A F
15	GCCCAGCAGGCTGACTACCTGGAGCAGGACCTGGCGATGACAAAGGATGGCCGCTCGTG
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	A Q Q A D Y L E Q D L A M T K D G R L V
20	GTGATCCATGACCATTTCTCGACGGACTGACCGACGTCGCCAAGAAGTTCCCCACCGC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	V I H D H F L D G L T D V A K K F P H R
25	CATAGGAAGGACGGGAGGTATTACGTGATTGACPTCACCCCTCAAGGAGATCCAGAGCCTG
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	H R K D G R Y Y V I D F T L K E I Q S L
30	GAGATGACCGAGAACTTCGAGACCGGCCCTGTGCCTCCCTAGGCCCTCAAGGAGCTC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	E M T E N F E T G P V P P S S A L K E L
35	ATTGAGGAGCTGGCAACATCACCCAGAACAGAACAGAAGGCTCCGCTCTGCAATGGCAGCATG
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	I E E L A N I T Q N Q K A P L C N G S M
40	GTATGGAGCATCAACCTGACAGCTGGCATGTACTGTGCAGCCCTGGACTCCCTGATCAAC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	V W S I N L T A G M Y C A A L D S L I N
45	GTGTCAGGCTGCAGTGCCATCGAGCGGACCCAGAGGACTTGAGCGCCTCTGCCCGCAC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	V S G C S A I E R T Q R I L S A F C P H
	AAGGTCTCAGCTGGCAGTTTCCAGCTTGCCTGCGAGACACCAAAATCGAGGTGGCC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	K V S A G Q F S S L R V R D T K I E V A
	CAGTTTGTAACGGACCTGCTCGTACATTAAAGAGACTTTTCGCCAGGGAACGTTCAAC
	-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
	Q F V T D L L V H L K R L F R Q G T F N

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FIG. 13, Immunogen 9 (protein SEQ ID NO. 18, DNA SEQ ID NO. 66)

5 TTTAATAATTTACCGTTAGCTTTGGTGCCTAAAGTATCTGCTAGTCATTAA
-----+-----+-----+-----+-----+-----+-----+
F N N F T V S F W L R V P K V S A S H L

10 GAAGGCCCTGCTCCCTCTAGGCCCTCAAGGAGCTCATTGAGGAGCTGGCAACATC
-----+-----+-----+-----+-----+-----+-----+
E G P V P P S S A L K E L I E E L A N I

15 ACCCAGAACAGAACGGCTCCGCTCTGCAATGGCAGCATGGTATGGAGCATCAACCTGACA
-----+-----+-----+-----+-----+-----+-----+
T Q N Q K A P L C N G S M V W S I N L T

20 GCTGGCATGTACTGTGCAGCCCTGGACTCCCTGATCAACGTGTCAGGCTGCAGTGCCATC
-----+-----+-----+-----+-----+-----+-----+
A G M Y C A A L D S L I N V S G C S A I

25 GAGCGGACCCAGAGGATCTTGAGCGCCCTCTGCCCGACAAGGTCTCAGCTGGCAGTT
-----+-----+-----+-----+-----+-----+-----+
E R T Q R I L S A F C P H K V S A G Q F

30 TCCAGCTTGCCTGTCCGAGACACCAAAATCGAGGTGGCCAGTTGTAACGGACCTGCTC
-----+-----+-----+-----+-----+-----+
S S L R V R D T K I E V A Q F V T D L L

35 GTACATTTAAAGAGACTTTTCGCCAGGGAACGTTCAAC
-----+-----+-----+-----+
V H L K R L F R Q G T F N

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FIG. 14, Immunogen 10 (SEQ ID NO. 19)

5 TTAATAATTTACCGTTAGCTTGGTTGCGTGTCTAAAGTATCTGCTAGTCATTAA
-----+-----+-----+-----+-----+-----+
F N N F T V S F W L R V P K V S A S H L

10 GAAGGCCCTGTGCCTCCCTAGGCCCTCAAGATTCTCATTGAGGAGCTGGCCAACATC
-----+-----+-----+-----+-----+-----+
E G P V P P S S A L K I L I E E L A N I

15 ACCCAGAACAGAAGGCTCCGCTTGCAATGGCAGCATGGTATGGAGCATAACCTGACA
-----+-----+-----+-----+-----+-----+
T Q N Q K A P L C N G S M V W S I N L T

20 GCTGGCATGTACTGTGCAGCCCTGGACTCCCTGATCAACGTGTCAGGCTGCAGTGCCATC
-----+-----+-----+-----+-----+-----+
A G M Y C A A L D S L I N V S G C S A I

25 GAGCGGACCCAGAGGATTTGAGCGCCTCTGCCGCACAAGGTCTCAGCTGGCAGTT
-----+-----+-----+-----+-----+-----+
E R T Q R I L S A F C P H K V S A G Q F

30 TCCAGCTTGCCTGTCCGAGACACCAAAATCGAGGTGGCCAGTTGTAACGGACCTGCTC
-----+-----+-----+-----+-----+-----+
S S L R V R D T K I E V A Q F V T D L L

35 GTACATTTAAAGAGACTTTCGCCAGGGAACGTTCAAC
-----+-----+-----+-----+-----+
V H L K R L F R Q G T F N

FIG 15, Immunogen 11 (SEQ ID NO. 20)

5 G P V P P S S A L K E L I E E L A N I T Q N Q K A P L C N G S M V
W S I N L T A G M Y C A A L D S L I N V S G C S A I E R T Q R I L
S A F C P H K V S A G Q F S S L H V R D T K I E V A Q F V T D L L
V H L K R L F R Q G R F N

10

FIG. 16, Immunogen 12 (SEQ ID NO. 21)

15 G P V P P S T A L K E L I E E L V N I T Q N Q K A P L C N G S M V
W S I N L T A G M Y C A A L D S L I N V S G C S A I E R T Q R I L
S A F C P H K V S A G Q F S S L R V R D T K I E V A Q F V T D L L
V H L K K L F R Q G T F N

FIG. 17, Immunogen 13 (SEQ ID NO. 22)

20 G P V P P S S A L R E L I E E L A N I T Q N Q K A P L C N G S
M V W S I N L T A G M Y C A A L E S L I N V S G C S A I D K T
Q R M L S A F C P H K V S A G Q F S S L H V R D T K I E V A Q
F V K D L L V H L K R L F R D G R F N

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Figure 18, protein SEQ ID NO. 23, DNA SEQ ID NO. 68

5 GGGCCGGTGCCAAGATCTGTGTCTCTCCCTCTGACCCCTAGGGAGCTATTGAGGAGCTG 60
 1 -----+-----+-----+-----+-----+-----+
 1 G P V P R S V S L P L T L R E L I E E L
 10 GTCAACATCACACAAGACCAGACTCCCCTGTGCAACGGCAGCATGGTATGGAGTGTGGAC 120
 61 -----+-----+-----+-----+-----+-----+
 61 V N I T Q D Q T P L C N G S M V W S V D
 15 CTGGCCGCTGGCGGGTACTGTGCAGCCCTGGAATCCCTGACCAACATCTCCAATTGCAAT 180
 121 -----+-----+-----+-----+-----+-----+
 121 L A A G G Y C A A L E S L T N I S N C N
 20 ...
 181 GCCATCGAGAAGACCCAGAGGATGCTGGCGGACTCTGTAACCGCAAGGCCCACTACG 240
 181 -----+-----+-----+-----+-----+
 181 A I E K T Q R M L G G L C N R K A P T T
 25 GTCTCCAGCCTCCCCGATACCAAAATCGAGGTGGCCAGTTGTAAAGGACCTGCTCAGC 300
 241 -----+-----+-----+-----+-----+
 241 V S S L P D T K I E V A Q F V K D L L S
 30 ...
 301 TACACAAAGCAACTGTTCGCCACGGCCCTCTAA 336
 301 -----+-----+-----+-----+
 301 Y T K Q L F R H G P F *
 35 ...